

## HANDRAIL

The present invention relates to a handrail or grip suitable for attaching to a boat tarpaulin. The present invention further relates to a tarpaulin with a handrail. Finally, the invention also relates to a mounting bush for attaching the handrail to a boat tarpaulin, for example.

A boat tarpaulin is a cover that is attached to the upper deck of a boat to protect it from sun, rain, or spray. In this regard, the prior art discloses full tarpaulins that cover the full upper deck of the boat; moreover, tarpaulins are known that are stretched over only part of the upper deck of the boat with the aid of a framework so that a person would be able to be under the tarpaulin and be sufficiently protected from spray and sunlight during the boat ride. Flexible panes are usually worked into this sort of tarpaulin so that the pilot of the boat is able to stay under the tarpaulin without his or her vision being blocked.

Sailcloth is the most commonly used material for these tarpaulins. However, nylon-reinforced PVC cloths or tarpaulins made of other man-made materials are known as well.

The prior art has the disadvantage that it is usually difficult to handle this type of tarpaulin because they usually must be stretched over the boat with a certain level of tension and are therefore difficult to grasp by hand. Furthermore, a person does not have anything to hold onto, in particular when entering and exiting the area covered by the tarpaulin.

The object of the invention is to eliminate the disadvantages of the prior art listed above and, in particular, to provide a tarpaulin that allows for easy handling and that may be easily grasped.

This object is attained by a handrail in accordance with Claim 1 and a tarpaulin in accordance with Claim 7 as well as by a mounting bush in accordance with Claim 9. Advantageous variations on the invention are the object of the respective subclaims.

According to the invention, a handrail is provided that includes a handlebar with a bush attached on each of its ends; these bushes are to be attached to the tarpaulin by an element of the bush being inserted through the cloth of the tarpaulin and being able to be attached to the support of the tarpaulin. By virtue of this modular construction, it is possible for a handrail to be attached to the tarpaulin in a simple manner. Moreover, the modular construction makes it possible for different handrails which, for example, may have handlebars of different lengths, to be attached to a tarpaulin. In order to adapt to the length of an individual handlebar, it is simply necessary to attach the bushes to the tarpaulin at an appropriate distance from one another, after which the handrail is affixed to the bushes. This handrail increases on-board safety to an important degree. In addition to the advantage of a simplified mounting, the further advantage is achieved that the support of the tarpaulin is reinforced by the attachment of the handrail.

In order to be able to be attached to the tarpaulin cloth, the bush has a screw thread on a threaded rod provided on the bush. A hole is formed in the tarpaulin and a fitting is provided, for example, in the form of a rivet. Thus, the screw thread can be inserted through the rivet hole and screwed in from the other side by means of a screw nut. For a better hold, a washer is provided, at least on the side of the screw nut. A wing nut is particularly suitable as a screw nut.

According to one advantageous embodiment, the bush has a fastening arm on which the screw thread on the threaded rod is arranged.

If a fastening arm is provided on the bush, it is also possible for a bore to be provided on the fastening arm into which an inside thread has been cut. Then the bush is fastened to a boat tarpaulin, for example, in that a screw is screwed into the inside thread through the tarpaulin from outside.

According to an advantageous embodiment, the handlebar is a tube with a round cross-section. In this regard, the bush is constructed in such a way that, on its one end, it has a round tube with an appropriate diameter for the handlebar rod to be inserted into it. Naturally, the round tube of the bush can also have a smaller diameter in comparison with that of the handlebar, so that the handlebar is slid onto the round tube of the bush. Although the embodiment of the

handrail in the form of a round tube is viewed as advantageous, it is also possible for the handrail with its bush to be provided as a rectangular tube or the like.

Moreover, it is seen as advantageous for the bush to have a perpendicular bore on the exterior circumference of the bore mantle into which the handlebar may be inserted and for this perpendicular bore to have an inside thread in which a locking bolt may be screwed in. Thus, the handlebar may be secured after being inserted into the bush by tightening the locking bolt. For this purpose, it is advantageous for the locking bolt to have a point on its inner end that is pressed into the end of the handlebar by tightening the locking bolt.

Another embodiment is equally advantageous in this regard in which the handlebar is locked using so-called locking or support springs. An embodiment with two support springs for each bush fastening, such that it is always necessary for both springs to be pushed down in order to release the lock on the handlebar on one bush, has proven to be particularly advantageous.

Finally, it is possible for the attachment of the handlebar to each respective bush to be realized using a screw thread as well, i.e., for a screw thread to be cut into the handlebar tube on the one end of the handlebar itself that cooperates with a corresponding thread on the round tube of the bush. Here, it is possible to provide an outside thread on the handlebar with a cooperating inside thread on the bush or vice versa. In order to fix the handlebar, it is then rotated into the bush in the manner of a threaded water pipe connection.

Rust-proof materials are particularly suitable as materials for the handrail.

Moreover, the object of the present invention is a tarpaulin for a boat having a tarpaulin cloth with a handrail as described above.

According to an advantageous embodiment, the tarpaulin has a tarpaulin support frame over which the tarpaulin cloth is stretched. So, in this embodiment, the handrail is screwed onto the tarpaulin support frame. A round-tube framework is usually used as the "tarpaulin frame," such that it is possible for the handrail to be screwed in by attaching two bushes through two

bores in the round-tube framework. The screw thread of a bush thus reaches through the tarpaulin cloth and tarpaulin frame.

An advantageous embodiment provides for one set collar per handrail bush to be slid onto the support tube before the tarpaulin cloth is pulled over the tarpaulin frame. The set collar is fixed on the framework using a screw in that the screw is screwed through the mantle of the set collar. The bush can then be fixed on this screw, which will be penetrating through the tarpaulin cloth after it has been stretched over the frame.

The invention will now be described in greater detail with reference to an advantageous embodiment shown in the attached figures, which show:

Fig. 1 a perspective top view of the upper deck of a boat with a tarpaulin according to the invention and a handrail arranged thereon;

Fig. 2 a schematic exploded view of a detail of the handrail;

Fig. 3 an advantageous embodiment of the bush;

Fig. 4 another advantageous embodiment of the bush;

Fig. 5 the detail of a locking or support spring for locking the handrail onto the bush;

Fig. 6 the attachment of the bush onto the tarpaulin support frame with the aid of a set collar.

Fig. 1 shows a perspective top view of a boat 10 in which the cockpit is covered with tarpaulin 12. Towards the front of the boat, flexible panes 14 have been worked into the tarpaulin. The tarpaulin 12 is stretched over a tarpaulin frame that is embodied as a tarpaulin tube frame 16. The tarpaulin tube frame 16 is located below the tarpaulin cloth, which means that it is covered in the view according to Fig. 1 and is therefore not visible. As is also shown in

Fig. 1, the tarpaulin 12 forms a canopy roof that is stretched between two frame tubes of the tarpaulin frame 16. A handrail 18 is attached to these tubes by means of which the tarpaulin 12 may easily be mounted or, in general, is made easier to handle during the mounting or removal process. Moreover, the handrail 18 provides a safety grip for a person to hold onto when entering or exiting the boat. The drawing shows only one handrail 18 running parallel to the longitudinal axis of the boat; naturally, however, it is possible for multiple handrails to be provided. It is also possible to provide a handrail 18 arranged crosswise to the longitudinal axis of the boat. For this purpose, it is simply necessary for two bores to be provided at the appropriate point in the tarpaulin canvas and the tarpaulin tube frame 16.

Fig. 2 shows a detail of the handrail according to the invention in a perspective view. The bush 20 has an opening on its one end into which the handlebar 22 is inserted. A locking bolt 30 is screwed into a bore on the outer circumference of the bush that has been provided with an inside thread; the locking bolt secures the handlebar 22 in place in the bush. The locking bolt 30 has an Imbus screw head.

On its opposite side, the bush 20 has a fastening arm 24 embodied in the form of a disc. A screw thread 26 is arranged on the disc-shaped fastening arm 24 that serves to secure the handrail in the hole in the tarpaulin cloth and tarpaulin tube frame 16 and is bolted together from below by means of a screw nut 28.

Fig. 3 shows an embodiment of the mounting bush 20 with a bore provided on the outer end of the fastening arm 24 with an inside thread 32 into which a screw (not shown) may be screwed. By means of this screw mechanism, the bush may be attached to a boat tarpaulin, for example, in such a way that, after the bush has been fixed into place, a handrail may be connected to the boat tarpaulin by affixing it to the respective bushes.

Fig. 3 shows two possible variants of this embodiment that differ with regard to the angle of the bore in the fastening arm. While the bore in one drawing is parallel to the middle axis of the fastening arm, the bore in the alternative drawing is inserted at an angle to the axis of the fastening arm.

As is shown in the drawing, the fastening arm may be a planar elbow piece that is formed onto the bush for the insertion of the handrail tube. At the point where the bore with an inside thread should be provided on the fastening arm, the fastening arm is integrally extended and forms a cylindrical bulge into which the bore with the inside thread may be cut.

Fig. 4 shows a further embodiment of the bush in which, in order to attach the handrail to the bush, the end of the handrail tube is slid onto a cylinder of the bush. Here, it is also possible for the cylinder to have an outside thread that engages with an inside thread provided on the inside of the handrail tube.

Fig. 5 is a locking mechanism for fixing the handle bar on the bush by means of a locking or support spring 34.

Fig. 6 shows an advantageous embodiment in which the respective bush of the handrail may be attached to the tarpaulin frame 16 using a set collar 36. For this purpose, before the tarpaulin cloth (not shown) is stretched over the tarpaulin frame 16, one set collar 36 per handrail bush is slid onto the frame tube. The set collar is secured on the frame by a screw in that the screw is screwed through the mantle of the set collar. The screw is affixed by an Imbus lug 38. The screw, with its outside thread, is sufficiently long that it is possible for the bush with its inside thread to be bolted onto the protruding portion of the screw even after the set collar has been affixed onto the rod. For a suitable seat of the bush on the set collar, it is advantageous for a rubber ring to be provided as a washer between the set collar and the bush.

The individual features of the embodiments shown may be combined with one another.

## List of Reference Numbers:

10	Boat	26	Screw thread
12	Tarpaulin	28	Screw nut
14	Pane	30	Locking bolt
16	Tarpaulin frame tube	32	Bore with inside thread
18	Handrail or grip	34	Support spring
20	Bush	36	Set collar
22	Handlebar	38	Imbus lug
24	Fastening arm		